

Bayfield County Land Information Plan 2022-2024



Wisconsin Land Information Program
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EXECUTIVE SUMMARY

Bayfield County is pleased to submit a Land Records Modernization Plan for the upcoming three-year planning horizon. The plan that follows is intended to build on the significant progress that resulted from the implementation of Bayfield County's initial, and subsequent, Land Records Modernization Plans filed in 1992, 1999, 2005, 2015, and 2018. In order to further the goals of modernizing land records and availing those records to those who need them, Bayfield County intends to continue to develop, maintain, and grow a Geographic Information System (GIS) that will provide ready access to a wide array of spatially referenced digital datasets. This plan was prepared by the Bayfield County Land Records Department overseen by the Executive Committee and Land Records Council of the Bayfield County Board of Supervisors.

About this Document. This document is a land information plan for Bayfield County prepared by the Land Information Officer (LIO) and the Land Information Council. By Wisconsin statute, a **"countywide plan for land records modernization"** is required for participation in the Wisconsin Land Information Program (WLIP). The purpose of this document is twofold: 1) to meet WLIP funding eligibility requirements necessary for receiving grants and retaining fees for land information, and 2) to plan for county land records modernization in order to improve the efficiency of government and provide improved government services to businesses and county residents.

WLIP Background. The WLIP, administered by the Wisconsin Department of Administration, is funded by document recording fees collected by Register of Deeds at the county-level. In 2022, Bayfield County will receive a total of \$107,736.00 in WLIP grants, which includes \$46,736.00 for Base Budget, \$60,000.00 for Strategic Initiative, and \$1,000.00 for Training and Education. \$53,264.00 was the amount of retained fees in local register of deeds document recording fees for land information projects in the July 2020-June 2021 period; the difference of \$46,736 for Base Budget will get Bayfield County to the \$100,000.00 level.

Land Information in Bayfield County. Many land and non-land related departments, as well as citizens, rely on GIS on a daily basis. It is imperative that we have the most up to date information available for the public, private and government agencies. Many decisions are made in reference to new land sales and broader planning purposes. Bayfield County has become dependent on having GIS at the public's fingertips. When it's not available the Land Records office is inundated by phone calls inquiring when our interactive mapping site will be up and running again.

Three-Year Mission Statement. It is the mission and goal of Bayfield County to stay informed as the industry creates hardware, software, and technology advancements in the next three years. Part of making Bayfield County Land Records a leader in the next three years is to continue to integrate land records in relational databases along with audio and visual aspects. The spatial data is topologically structured to assure integration between all levels. The main aspects that we want to focus on is the Public Land Survey System (PLSS), addressing, road centerlines, integrate survey grade GPS in the parcel mapping, additional updates to interactive mapping, recreation layers, increase mobile technology, use data collection devices UAS/sonar/drone, increase use in technology, update and enhance base layers.

Land Information Office Projects. To realize this mission, in the next three years, the county Land Information office will focus on the following projects:

Bayfield County Land Information Projects: 2022-2024

1. Collect county-wide LiDAR that will be flown in 2022
2. Expand the use of mobile UAS/UAV/drone technology, including the following focus areas:
 - Economic Development (business aerals for promotion)
 - Land Sales (helps people get a feel for the property)
 - PLSS Land Use Comparisons (to find corners and document encroachments on county land)
 - Topography Surveys (for county property surveys)
 - Invasive Species Detection and Monitoring (examples include purple loosestrife, yellow iris, and Japanese knotweed)
 - Search and Rescue with the Sheriff Department (document evidence and assist with locating missing persons)
 - Non-Metallic Mining (gravel pit aerals for monitoring)
 - Forest Monitoring (tree stands management and disease tracking)
3. Complete ROD document back-indexing project
4. NG-911
5. Meet all four benchmarks as set forth by the DOA and described in 2022-24 WLIP grant application:
 - Benchmark 1 – Parcel and Zoning Data Submission – completed
 - Benchmark 2 – Extended Parcel Attribute Set Submission – completed
 - Benchmark 3 – Completion of County Parcel Fabric – completed
 - Benchmark 4 – Completion and Integration of PLSS – ongoing

The remainder of this document provides details on Bayfield County and the WLIP, summarizes current and future land information projects, and reviews the county's status in completion and maintenance of the map data layers known as Foundational Elements.

1 INTRODUCTION

In 1989, a public funding mechanism was created whereby a portion of county register of deeds document recording fees collected from real estate transactions would be devoted to land information through a new program called the Wisconsin Land Information Program (WLIP). The purpose of the land information plan is to meet WLIP requirements and aid in county planning for land records modernization.

The WLIP and the Land Information Plan Requirement

In order to participate in the WLIP, counties must meet certain requirements:

- Update the county's land information plan at least every three years
- Meet with the county Land Information Council to review expenditures, policies, and priorities of the land information office at least once per year
- Report on expenditure activities each year
- Submit detailed applications for WLIP grants
- Complete the annual WLIP survey
- Subscribe to DOA's land information listserv
- Coordinate the sharing of parcel/tax roll data with the Department of Administration in a searchable format determined by DOA under s. 59.72(2)(a)

Any grants received and fees retained for land information through the WLIP must be spent consistent with the county land information plan.

Act 20 and the Statewide Parcel Map Initiative

A major development for the WLIP occurred in 2013 through the state budget bill, known as Act 20. It directed the Department of Administration (DOA) to create a statewide digital parcel map in coordination with counties.

Act 20 also provided more revenue for WLIP grants, specifically for the improvement of local parcel datasets. The WLIP is dedicated to helping counties meet the goals of Act 20 and has made funding available to counties in the form of Strategic Initiative grants to be prioritized for the purposes of parcel/tax roll dataset improvement.

For Strategic Initiative grant eligibility, counties are required to apply WLIP funding toward achieving certain statewide objectives, specified in the form of "benchmarks." Benchmarks for parcel data—standards or achievement levels on data quality or completeness—were determined through a participatory planning process. Current benchmarks are detailed in the WLIP grant application, as will be future benchmarks.

WLIP Benchmarks (For 2016-2021 Grant Years)

- Benchmark 1 & 2 – Parcel and Zoning Data Submission/Extended Parcel Attribute Set Submission
- Benchmark 3 – Completion of County Parcel Fabric
- Benchmark 4 – Completion and Integration of PLSS

More information on how Bayfield County is meeting these benchmarks appears in the Foundational Elements section of this plan document.

LAND INFORMATION

Any physical, legal, economic or environmental information or characteristics concerning land, water, groundwater, subsurface resources or air in this state.

'Land information' includes information relating to topography, soil, soil erosion, geology, minerals, vegetation, land cover, wildlife, associated natural resources, land ownership, land use, land use controls and restrictions, jurisdictional boundaries, tax assessment, land value, land survey records and references, geodetic control networks, aerial photographs, maps, planimetric data, remote sensing data, historic and prehistoric sites and economic projections.

– Wis. Stats. section 59.72(1)(a)

County Land Information System History and Context

In order to further the goals of modernizing land information and making records available to those who need it, Bayfield County intends to continue to develop, maintain, and grow a Geographic Information System (GIS) that will provide immediate, on-demand access to a wide array of spatially referenced digital datasets. This plan was prepared by the Bayfield County Land Records Department, overseen by the Executive Committee and Land Records Council of the Bayfield County Board of Supervisors.

County Land Information Plan Process

County land information plans were initially updated every five years. However, as a result of Act 20, counties must update and submit their plans to DOA for approval every three years. The 2022-2024 plan, completed at the end of 2021, is the third post-Act 20 required update.

County Land Information Plan Timeline

- DOA release of finalized instructions by March 31, 2021.
- April–September 2021: Counties work on land info plans.
- Draft plans due to DOA by September 30, 2021 (but sooner is advised).
- Final plans with county land info council approval due by December 31st, 2021.

Plan Participants and Contact Information

Another requirement for participation in the WLIP is the county Land Information Council, established by legislation in 2010. The council is tasked with reviewing the priorities, needs, policies, and expenditures of a land information office and advising the county on matters affecting that office.

According to s. 59.72(3m), Wis. Stats., the county Land Information Council is to include:

- Register of Deeds
- Treasurer
- Real Property Lister or designee
- Member of the county board
- Representative of the Land Information Office
- A realtor or member of the Realtors Association employed within the county
- A public safety or emergency communications representative employed within the county
- County Surveyor or a registered professional land surveyor employed within the county
- Other members of the board or public that the board designates

The Land Information Council must have a role in the development of the county land information plan, and DOA requires county land information councils to approve final plans. A record documenting county land information council approval should be included in the final submission of the plan to DOA. County board approval of plans is encouraged but not required.

This plan was prepared by the county LIO, the Land Information Council, and others as listed below.

County Land Information Council and Plan Workgroup				
Name	Title	Affiliation	Email	Phone
*Scott Galetka	Land Records Admin, LIO	Land Records	scott.galetka@bayfieldcounty.wi.gov	715-373-6156
*Jenna Galligan	County Treasurer	Treasurer	jenna.galligan@bayfieldcounty.wi.gov	715-373-6131
*Pamela Ledin	Real Property Lister	Land Records	pam.ledin@bayfieldcounty.wi.gov	715-373-6132
*Jeremy Oswald	County Board Member	County Board	jeremy.oswald@bayfieldcounty.wi.gov	715-798-3846
*Daniel Heffner	Register of Deeds	Register of Deeds	dan.heffner@bayfieldcounty.wi.gov	715-373-6119
*Jon Wheeler	Realtor	Blue Water Realty	jon@bluewaterrealty.org	715-413-0452
*Paul Susienka	Sheriff	Sheriff's Office	paul.susienka@bayfieldcounty.wi.gov	715-373-6300
*Patrick McKuen	County Surveyor	Land Records	countysurveyor@bayfieldcounty.wi.gov	715-373-6156
Carmen Novak	GIS Technician	Land Records	carmen.novak@bayfieldcounty.wi.gov	715-373-6156
Mark Abeles-Allison	County Administrator	Admin	mark.abeles-allison@bayfieldcounty.wi.gov	715-373-6181

* Land Information Council Members designated by asterisk

2 FOUNDATIONAL ELEMENTS

Counties must have a land information plan that addresses development of specific datasets or map layer groupings historically referred to as the WLIP Foundational Elements. Foundational Elements incorporate nationally-recognized “Framework Data” elements, the major map data themes that serve as the backbone required by users to conduct most mapping and geospatial analysis.

In the past, Foundational Elements were selected by the former Wisconsin Land Information Board under the guiding idea that program success is dependent upon a focus for program activities. Thus, the *Uniform Instructions* place priority on certain elements, which must be addressed in order for a county land information plan to be approved. Beyond the county’s use for planning purposes, Foundational Element information is of value to state agencies and the WLIP to understand progress in completion and maintenance of these key map data layers.

FOUNDATIONAL ELEMENTS

PLSS

Parcel Mapping

LiDAR and Other Elevation Data

Orthoimagery

Address Points and Street Centerlines

Land Use

Zoning

Administrative Boundaries

Other Layers

PLSS

Public Land Survey System Monuments

Layer Status

For the PLSS Foundational Element, the table below documents layer status:

PLSS Layer Status

	Status/Comments
Number of PLSS corners (section, ¼, meander) set in original government survey that can be remonumented in your county	● 5,082 (<i>Total number of section, quarter, and meander corners</i>)
Number and percent of PLSS corners capable of being remonumented in your county that have been remonumented	● 4,169; 82% (<i>Includes tie sheets on file, with and without GPS</i>)
Number and percent of remonumented PLSS corners with survey grade coordinates (see below for definition)	● 2,851; 56% (<i>Number of points in "Section Corner GPS" layer</i>)
<ul style="list-style-type: none"> ● SURVEY GRADE – coordinates collected under the direction of a Professional Land Surveyor, in a coordinate system allowed by 236.18(2), and obtained by means, methods and equipment capable of repeatable 2 centimeter or better precision ● SUB-METER – point precision of 1 meter or better ● APPROXIMATE – point precision within 5 meters or coordinates derived from public records or other relevant information 	● 0 ● 0
Number and percent of survey grade PLSS corners integrated into county digital parcel layer	● 2,851; 100% (<i>Number of points in "Section Corner GPS" layer</i>)
Number and percent of non-survey grade PLSS corners integrated into county digital parcel layer	● 0
Tie sheets available online?	Yes - https://maps.bayfieldcounty.wi.gov/BayfieldWAB/ and hard copy tie sheets available in the office and referenced in plat books
Percentage of remonumented PLSS corners that have tie sheets available online (whether or not they have corresponding coordinate values)	● 100%
Percentage of remonumented PLSS corners that have tie sheets available online (whether or not they have corresponding coordinate values) and a corresponding URL path/hyperlink value in the PLSS geodatabase	● 100%
PLSS corners believed to be remonumented based on filed tie-sheets or surveys, but do not have coordinate values	● 1,929 (<i>Includes tie sheets on file, without GPS</i>)
Approximate number of PLSS corners believed to be lost or obliterated	● 1,500 (<i>Approximate</i>)
Which system(s) for corner point identification/numbering does the county employ (e.g., the Romportl point numbering system known as Wisconsin Corner Point Identification System, the BLM Point ID Standard, or other corner point ID system)?	Romportl point numbering system known as Wisconsin Corner Point Identification System
Does the county contain any non-PLSS areas (e.g., river frontage long lots, French land claims, private claims, farm lots, French long lots, etc.) or any special situations regarding PLSS data for tribal lands?	No
Total number of PLSS corners along each bordering county	● Lake Superior 217 ● Ashland 70 ● Douglas 111 ● Sawyer 61 ● Total: 459 (<i>Total bordering corners we have filed</i>)
Number and percent of PLSS corners remonumented along each county boundary	● Lake Superior 139 ● Ashland 34 ● Douglas 51 ● Sawyer 40 ● Total: 264 (<i>Corners remonumented from other counties; quality unclear</i>)
Number and percent of remonumented PLSS corners along each county boundary with survey grade coordinates	● Lake Superior 44 ● Ashland 36 ● Douglas 60 ● Sawyer 21 ● Total: 161 (<i>Corners remonumented with survey grade coordinates</i>)
In what ways does your county collaborate with or plan to collaborate with neighboring counties for PLSS updates on shared county borders?	Yes, we have met with adjoining county surveyors but the turnover rate in staffing over the past few years has set us back. We also have approx. 100 miles of lakeshore that does not border a county which we will have to complete on our own.

Custodian

- Land Records Department
- County Surveyor

Maintenance

- Bayfield County has a survey program that complies with the requirements of Wisconsin Administrative Code A-E 7.08 and Wisconsin Statute 59.74; and we plan to continue the program countywide. Coordinates are maintained in the Bayfield County Coordinate System which is mathematically relatable to the North American Datum (NAD) 83(91). In 2005 the county started to collect GPS coordinates on existing Section and ¼ corners. In 2017 and 2018 the county tried to hire a full time County Surveyor, but we were unable to accomplish this. Instead, we were able to hire a part time surveyor on contract and we currently have a full-time Survey Technician to collect survey grade coordinates on section corners. We hope to be completely remonumented by **2041** with existing funding, using a contractor and full-time staff, but have had difficulties keeping the program fully staffed in the past. In 2021, we have continued the survey program successfully in Bayfield County with the help of our full-time Survey Technician and contracted County Surveyor. Existing coordinates were obtained on PLSS corners with either a Leica 1200+ RTK GNSS or a Leica Viva GS14 RTK GNSS or a Leica 1205+ Robotic Total Station through our contracts with Nelson Surveying out of Ashland, WI, and Pine Ridge Land Surveying out of Ashland, WI. Bayfield County has collected some coordinates with an R8 Trimble since 2009 using the HARN stations and in 2014 we started using Virtual Reference System (VRS).

Standards

- Statutory Standards for PLSS Corner Remonumentation
 - s. 59.74, Wis. Stats. Perpetuation of section corners, landmarks.
 - s. 60.84, Wis. Stats. Monuments.
 - ch. A-E 7.08, Wis. Admin. Code, U.S. public land survey monument record.
 - ch. A-E 7.06, Wis. Admin. Code, Measurements.
 - s. 236.15, Wis. Stats. Surveying requirements.
- Wisconsin County Surveyor's Association **survey grade** standard:
 - Coordinates collected under the direction of a Professional Land Surveyor, in a coordinate system allowed by s. 236.18(2), and obtained by means, methods and equipment capable of repeatable 2 centimeter or better precision.
 - **SUB-METER** – point precision of 1 meter or better
 - **APPROXIMATE** – point precision within 5 meters or coordinates derived from public records or other relevant information

Other Geodetic Control and Control Networks

e.g., HARN, Height Mod., etc.

Layer Status

- The Geodetic Control Network was completed in 1994, it consists of 123 stations and two HARN stations at about 3-mile intervals (connected to 6 HARN stations in total). The relative horizontal positional accuracy between all adjoining stations of the network, evaluated at the 95% level, does not exceed 0.046 feet. Most station pairings have relative horizontal accuracies of 0.02 feet. The network has been blue booked. Coordinates are maintained in the Bayfield County Coordinate System which is mathematically relatable to the North American Datum (NAD) 83(91).
- The Wisconsin Department of Transportation (WisDOT) has developed a state wide Global Positioning System (GPS) reference station network. This network, called Wisconsin Continuously Operating Reference Stations (WISCORS) Network, consists of permanent GPS sites which provide real-time corrections to mobile users. Ashland County Airport is one of these stations, and two more in Bayfield County have been placed in Herbster and Cable.
- WisDOT has completed all the leveling and GPS observations for the Wisconsin Height Modernization Program (WI-HMP) in Bayfield County and all of the data has been blue booked. As part of this project, Bayfield County constructed approximately four benchmarks near the City of Washburn, which were included in the Height Modernization project. These benchmarks were built to the same specifications as the monuments for the Height Modernization Program and they have been blue booked.

- National Geodetic Survey (NGS) has historic control throughout the county. Information for these can be found on the Wisconsin State Cartographer's Control Finder website. As time allows, we would like to locate these control monuments.
- This layer is available on our county GIS website.

Custodian

- Land Records Department
- County Surveyor

Maintenance

- Bayfield County works with WisDOT to protect and preserve the Geodetic, CORS and Height Modernization networks. We keep an eye on these to make sure the signs are intact and visible. When we are notified of pending road work, we try to work with all parties to preserve these monuments.

Standards

- Not in statute.

Parcel Mapping

Parcel Geometries

Layer Status

- The county does have a parcel polygon model that directly integrates tax/assessment data as parcel attributes.
- Bayfield County countywide parcel mapping has been completed for quite some time. The original parcel mapping was converted from AutoCAD to shapefile format in 2007. Originally the aerial imagery was not used as a base layer so we did not have the background check to confirm that the aeriels and roads matched the parcel geometries; this may be the reason why some of our parcels are 75-200 feet off from on the ground coordinates. At that time, we brought the maintenance in-house so we can update the parcels as changes come in. Since then, in 2009, we imported the parcels into geodatabase format in SDE. Although our parcels are complete, they lack in accuracy, this is one of our biggest cautions when using the data. In 2018 we moved our parcel data to the ArcMap parcel fabric to use some of the tools available to maintain the parcels. Some other enhancements include incorporating the PLSS and historic parcels going back to 2001 in the fabric. Recently, in 2021, we migrated our parcels into the latest version of the parcel fabric: ArcGIS Pro parcel fabric; this was done to adapt to the latest technology and utilize the most advanced toolsets. The Real Property Lister currently updates the parcels with assistance from the GIS Technician for parcel alignment and management in the parcel fabric. We also update our metadata as often as we can.
- This layer is available on our county GIS website, and the parcel dataset is available for download free of charge via the FTP site.
- Projected Coordinate System: NAD_1983_HARN_WISCRS_Bayfield_County_Feet Projection: Lambert_Conformal_Conic Geographic Coordinate System: GCS_North_American_1983_HARN Datum: D_North_American_1983_HARN
- We maintain a parcel tax number and perform joins against the land information datasets.
- Bayfield County is currently working on getting the parcels updated in ESRI's ArcGIS parcel fabric data model completed by January 2022. We will also aim to incorporate the GPS coordinates and new grid from the PLSS work to adjust for more accurate parcels.
- Online parcel viewer software/app and vendor name: We currently use Web AppBuilder and update the software two to three times per year. Scott M. Galetka, LIO creates the web map and has North Point Geographic out of Duluth, MN to create a few custom widgets.
- The unique URL weblink for each parcel record: [https://maps.bayfieldcounty.wi.gov/BayfieldWAB/?query=BayfieldCoBaseMap_3728_14%2CPRPID%2C\(unique PRPID number here\)](https://maps.bayfieldcounty.wi.gov/BayfieldWAB/?query=BayfieldCoBaseMap_3728_14%2CPRPID%2C(unique PRPID number here))
- Plat book publications depend on parcel geometries and many other layers. The most recent plat book version printed is from 2016; we plan to print a 2022 version of the plat book.

Custodian

- Land Records Department

Maintenance

- This layer is in a constant state of maintenance as there are many property transfers, splits, merges, and CSMs recorded, all of which affect the mapping and related land information that appears. Parcel splits, merges, and CSMs are mapped simultaneously as they are assigned a parcel number from the Real Property Lister. The information is updated in Novus and also mapped in GIS at the same time. The latest information is published to the GIS Web Map and can be viewed by clicking on the hyperlink to the parcel information in the land records system.

Standards and Documentation

- Data Dictionary – A data dictionary for the parcel layer is currently available with definitions for each element/attribute name. However, more work could be done to include explanations of county specific attribute construction.

Assessment/Tax Roll Data

Layer Status

- Our tax system was developed in partnership with three other counties (Sawyer, Burnett & Price). The name of the program is called Novus. Currently a total of five counties in Wisconsin use the program: Bayfield, Burnett, Price, Sawyer & Washburn. Support is provided by Allshore Virtual Staffing, Dag Bystrom, and our internal IT Departments. We prepare and print the assessment rolls, tax rolls and tax bills. This is done by the Real Property Lister and the Land Records Specialist.
- Ownership/assessment/tax information can also be found on our county GIS website.

Custodian

- Land Records Department; Real Property Lister & Land Records Specialist
- County Treasurer Office

Maintenance

- Maintenance of the searchable format standard: Bayfield County has employed Dag Bystrom to create a table view of the data required and correct field names. Although this table reduces much of the work to be submitted, it does not catch all the problems and manually correct some of the table. We continue to fine-tune our process. Our goal is to produce the table as a simple export.
- Searchable format workflow process has been getting better with each submission. We have a table available at any time but some of the data needs some clean up. We spend about a week of staff time on QA/QC of the data once it is exported.
- This data is in a constant state of maintenance. Property sales, splits, mailing address changes and assessment data imports.

Standards

- s. 73.03(2a), Wis. Stats. Department of Revenue (DOR) – Powers and duties defined.
- Department of Revenue Property Assessment Manual – Chapter 5 and DOR format standard requested by DOR for assessment/tax roll data
- s. 59.72(2)(a), Wis. Stats. Presence of all nine “Act 20” attributes
- s. 59.72(2)(a), Wis. Stats. Crosswalk of attributes

Act 20 Attributes Required by s. 59.72(2)(a)	Field Name(s) in County Land Info System	Notes on Data or Exceptions to DOR Standard
Assessed value of land	TASASSESSMENT.AVLV	
Assessed value of improvements	TASASSESSMENT.AVIV	
Total assessed value	TASASSESSMENT.AVLV + TASASSESSMENT.AVIV	
Class of property, as specified in s. 70.32 (2)(a)	TASASSESSMENT.AVCID	
Estimated fair market value	TAXMASTER.EFMUL + TAXMASTER.EFMVI	
Total property tax	TAXMASTER.REDVE	
Any zoning information maintained by the county	TASZONING.ZNID + LU_ZONING.ZNCODE	
Any property address information maintained by the county	TASADDRESS.STNUM + LU.STREETNAME.FULLNAME	
Any acreage information maintained by the county	TAXMASTER.ACRES	

Non-Assessment/Tax Information Tied to Parcels - Land Use Permits

Layer Status

- Land Use Permits have been scanned in back to April 2008. Digital files are indexed by town and date online in a pdf format. Paper copies are in files and it's a goal to get all permits scanned in and published online. View online: <https://www.bayfieldcounty.wi.gov/226/Issued-Permits>.

Custodian

- Planning and Zoning Department

Maintenance

- This data is in a constant state of maintenance. As new permits come in they are imaged and indexed online.

Standards

- Not in statute.

Non-Assessment/Tax Information Tied to Parcels - Septic Records

Layer Status

- Septic data is online: <http://septicsearch.com/Pump/Default.aspx> for Bayfield County and tied to the parcel number, name, address, lot, block, sanitary permit number, state permit, subdivision, and year issued.

Custodian

- Planning and Zoning Department

Maintenance

- This data is in a constant state of maintenance. As new permits come in they are imaged and indexed online.

Standards

- Not in statute.

Non-Assessment/Tax Information Tied to Parcels - Easements

Layer Status

- Bayfield County does not map easements at this time as parcels are the first priority. Most powerline easements are blanket easements. Many access easements say, "over the existing road as traveled;" these are difficult to map with our extensive tree cover. Mapping all easements would be a large project and would take many hours to complete.

Custodian

- N/A

Maintenance

- N/A

Standards

- N/A

Non-Assessment/Tax Information Tied to Parcels - Non-Metallic Mining

Layer Status

- As of 2021, Bayfield County has purchased two UAV (drones) to complete aerial surveys of each non-metallic mining site. This is done to verify the correct information is being reported. This is much safer than GPSing the pit on a yearly basis and allows us to get a more accurate picture of site activities between our orthophoto flights, which are typically on a five-year cycle. This layer exists for all permitted non-metallic mining sites within the county; however, it is not directly integrated into the parcel polygons as attributes.
- This layer is available on our county GIS website.

Custodian

- Planning and Zoning Department
- Land Records Department

Maintenance

- The goal is to capture the pits once each year with a UAS and then analyze in ArcGIS to calculate the gravel pit size, so the layer is current as a snapshot once per year. We currently have half of the pits flown and are waiting on processing for 2021. This is a much safer way of collecting the data on a more frequent basis.

Standards

- NR 135, Wis. Admin. Code, Non-Metallic Mining Reclamation.

Non-Assessment/Tax Information Tied to Parcels - Restrictive Covenants

Layer Status

- We don't map restrictive covenants at this time, parcels are the first priority. We would like to create a layer which shows all the parcels in which the county retained the mineral rights.

Custodian

- N/A

Maintenance

- N/A

Standards

- N/A

Non-Assessment/Tax Information Tied to Parcels - Brownfields

Layer Status

- We don't map brownfields at this time.

Custodian

- N/A

Maintenance

- N/A

Standards

- N/A

ROD Real Estate Document Indexing and Imaging

Layer Status

- **Grantor/Grantee Index:**

Grantor/Grantee indexes are available in the Bayfield County Register of Deed's Office in paper volumes between 1853 and 1991. Documents are fully indexed in Laredo back to Volume 754 Page 403 (December 1998) to the present. Documents can be found by document number or volume & page in Laredo back to Volume 665 Page 1 (~March 1996). A switch from Laredo to Trimin Systems will be complete by 10-01-2022. This will replace Laredo with LandShark.

- **Tract Index:**

Tract index is available in paper form from the 1850s through September 1, 2016. Beginning September 2, 2016, all indexing is available on computer. Tract indexes will become available to the public when resource options become available. Tract indexing is PLSS based. Documents that you would find in the tract index include deeds, mortgages, satisfactions, land contracts and other miscellaneous documents that affect land ownership.

- **Imaging:**

Most real estate documents are imaged and have been electronically stored. From early 1990's and on, the public can obtain images and tract information through Tapestry or Laredo. Those images not available will be once all social security numbers have been redacted and index information has been entered. All certified survey maps and plats are available in electronic format.

- **ROD Software/App and Vendor Name:**

Laredo/Tapestry – Vendor is Fidar Technologies. A switch from Laredo to Trimin Systems/LandShark will be complete by 10-01-2022.

Laredo Fee Structure:

Minutes per month

Plan Options:	A. 0-250	\$85/month
	B. 251-500	\$135/month
	C. 501-1000	\$205/month
	D. 1001-2000	\$305/month
	E. 2001- and up	\$410/month

All plans are subject to an image maintenance fee of \$0.50 a printed page and overage charges per minute based on plan selection. Tapestry is \$6.95 a search and \$1.00 for each printed page.

Custodian

- Register of Deeds

Maintenance

- Records are maintained by Bayfield County Register of Deeds. Images are maintained by the Bayfield County IT Department and Fidlar Technologies. The server is backed up to Sawyer County for disaster recovery.

Standards

- s. 59.43, Wis. Stats. Register of Deeds, duties, fees, deputies.
- ch. 706, Wis. Stats. Conveyances of real property; Recording; Titles.

LiDAR and Other Elevation Data

LiDAR

Layer Status

- Bayfield County had Light Detection and Ranging (LiDAR) flown parts of the county in May 2009, 2015, and 2016. This was part of a Wisconsin Coastal Grant from NOAA that encompassed one mile inland that included buffers around the cities. Bayfield County had LiDAR flown in the Fall of 2015 for the Lake Superior Watershed about 70% of the county. We applied and received a grant for the remainder of the county in 2016 and had the two datasets merged together into one seamless countywide layer. Bayfield County plans to complete another LiDAR flight in 2022.
- https://coast.noaa.gov/htdata/lidar2_z/geoid12b/data/6337/
- https://coast.noaa.gov/htdata/lidar1_z/geoid12a/data/2507/
- **Accuracy:** LiDAR processing utilizes several software packages, including GeoCue and the TerraSolid suite of processing components. The GeoCue software is a database management system for housing the LiDAR dataset (usually multiple gigabytes in size). GeoCue incorporates a thorough checklist of processing steps and quality assurance/quality control (QA/QC) procedures that assist in the LiDAR workflow. The TerraSolid software suite is used to automate the initial classification of the LiDAR point cloud based on a set of predetermined parameters. LiDAR technicians refer to ground cover research (natural and cultural features) within the project area and determine algorithms most suitable for the initial automated LiDAR classification. (Some algorithms/filters recognize the ground in forests well, while others have greater capability in urban areas). During this process each point is given an initial classification (e.g., as ground, vegetation, or noise) based on the point's coordinates and the relation to its neighbors. Classifications to be assigned include all those outlined by ASPRS standards. The initial classifications produce a coarse and inexact dataset but offer an adequate starting point for the subsequent manual classification procedure. During this step, "overlap" points are automatically classified (those originating from neighboring flight lines) using information gathered from the ABGPS and IMU data. Any duplicate points existing from adjacent flight lines are removed during this process. Hydrographic breaklines are collected using LiDARgrammetry to ensure hydroflattened water surfaces. This process involves manipulating the LiDAR data's intensity information to create a metrically sound stereo environment. From this generated "imagery", breaklines are photogrammetrically compiled. Breakline polygons are created to represent open water bodies. The LiDAR points that fall within these areas are classified as "water." All hydrographic breaklines include a 3.125-foot buffer, with the Class 2 (bare earth) points being re-classified as Class 10 (ignored ground). TerraSolid is further used for the subsequent manual

classification of the LiDAR points allowing technicians to view the point cloud in a number of ways to ensure accuracy and consistency of points and uniformity of point coverage

- **Post spacing:** USGS QL2 Specifications – 0.71 meter and greater than or equal to 2 points per meter square.
- **Contractor's standard, etc.:** United State Geological Survey (USGS) – LiDAR Base Specifications, Version1.2
- **Contractor's standard:** Bayfield County had LiDAR flown in the fall of 2015 for the Lake Superior Watershed for about 70% of the county. We applied and received a grant for the remainder of the county in 2016 and had the two datasets merged together into one seamless countywide layer. This was a partnership grant with the Department of Administration and Wisconsin Coastal Management Program by Ayres Associates/Quantum Spatial.
- **Next planned acquisition year:** The county plans to acquire new LiDAR in spring of 2022 as part of a 3DEP program. The county would also like to reacquire countywide LiDAR around 2030 or possibly earlier if FEMA plans on updating the county floodplain maps. Many uses with forestry applications may make the need sooner.

QL1 Option:

Base Project to meet QL1 specifications: not-to-exceed \$458,400

Bayfield County cost share: \$168,080

USGS cost share: \$290,320

Recommended Lidar enhancements and derivatives to the base project: \$49,250

- Improved hydro breaklines (20-ft and wider streams and 2 acre and larger ponds)
- 1-ft contours (topologically cleaned, all types)
- Automated classification of buildings and vegetation
- Bare earth dataset – class 2 ground points only
- Intensity imagery
- Digital surface model

Additional Lidar enhancements and derivatives for consideration:

- Ayres Lidar Online web application: \$9,500 (first year)
- Culvert collection and hydro-enforced DEM: \$52,600
- Further improved hydro breaklines (8-ft streams, 1-acre ponds): \$10,650
- 2D Building Outlines: \$16,750
- 2D Tree Canopy outlines: \$11,800
- 6% / 12% Slope Model: \$5,100
- *Closed depression mapping: \$15,200
- *EVAAL Soil Erosion Vulnerability Assessment: \$32,250

Custodian

- Land Records Department

Maintenance

- No maintenance required as this is a static (snap shot in time) dataset.
- With the purchase of a UAS, the county has the capability to gather data on elevations through aerial photography means on flat ground without obstructions such as trees. We do not have a LiDAR capable UAS but may be something we look into for the future.

Standards

- The data will adhere to the USGS LiDAR Base Specifications v1.2. In addition to the requirements outlined in the USGS Base Lidar Specification v1.2, lidar data and derived products must meet the current definition of Quality Level 2 (QL2). Upgrades to QL1 are allowed but the cost of the upgrades is the responsibility of the applicant.

LiDAR Derivatives

Layer Status

- As part of the USGS LiDAR Base Specifications, the deliverables are defined to meet the specifications.
 - Hydro-Enforced DEMs
 - Metadata
 - Raw Point Cloud

- Classified Point Cloud
- Bare-Earth Surface (Raster Digital Elevation Model)
- Breaklines
- Contours 2ft.
- Hillshade
- Aspect

Custodian

- Land Records Department

Maintenance

- This is a static dataset. Portions of the dataset can be updated. Bayfield County is looking into training on the best ways to maintain the dataset.

Standards

- None in statute.

Orthoimagery

2020 Orthoimagery

Layer Status

- Countywide color leaf-off 6-inch resolution imagery was acquired in April 2020 as part of the 2020 Wisconsin Regional Orthophotography Consortium (WROC) program. Prior to that, imagery has been collected in 2018, 2015, 2009, and 2005. Contractor for the 2020 orthoimagery was Ayres Associates.
- The county is on a five-year rotation alternating between standard orthoimagery and oblique imagery. In 2025, the county would like to acquire countywide color four-way obliques (somewhere from 4-inch to 9-inch resolution on the obliques) along with color 6-inch orthoimagery. Then in 2030 acquire countywide color 6-inch or 3-inch orthoimagery.

Custodian

- Land Records Department

Maintenance

- No maintenance required as this is a static (snapshot in time) dataset. The county may utilize a UAV to update certain areas of the photo in high development areas.
- The plan is to update the imagery constantly and build an application for other departments to request a flight of interest.

Standards

- None in statute.

2018 Orthoimagery

Layer Status

- Countywide color .5-3-centimeter resolution. Acquired throughout the 2018 year. We have acquired site specific areas with a UAS to update some of the areas that have changed. Main areas of interest this year has been gravel pits, business park, research of hazelnuts, algae bloom, fairgrounds, road washouts and flood areas.

Custodian

- Land Records Department

Maintenance

- No maintenance required as this is a static (snapshot in time) dataset.

Standards

- None in statute.

2015 Orthoimagery

Layer Status

- Countywide color 6-inch resolution. Acquired spring 2015 leaf-off.

Custodian

- Land Records Department

Maintenance

- No maintenance required as this is a static (snapshot in time) dataset.

Standards

- None in statute.

2009 Orthoimagery

Layer Status

- Countywide color 12-inch resolution and approximately 60% county coverage 6-inch resolution. Acquired spring 2009 leaf-off. This is a by-product of the oblique project, so the positional accuracy is not certified by the contractor (Pictometry International). This project was 100% funded with a federal grant.

Custodian

- Land Records Department

Maintenance

- No maintenance required as this is a static (snapshot in time) dataset.

Standards

- None in statute.

2005 Orthoimagery

Layer Status

- Countywide color 12-inch resolution. Acquired spring 2005 leaf-off.

Custodian

- Land Records Department

Maintenance

- No maintenance required as this is a static (snapshot in time) dataset.

Standards

- None in statute.

2009 Oblique Imagery

Layer Status

- Countywide color 12-inch resolution two angle obliques (North & South views) and approximately 60% county coverage color 4-inch resolution four angle obliques (North, South, East, and West). Acquired spring 2009 leaf-off. Contractor was Pictometry International. This imagery is available on our county GIS website through a link to Bing Maps.
- This imagery is used in the 911 dispatch center.

Custodian

- Land Records Department

Maintenance

- No maintenance required as this is a static (snapshot in time) dataset.

Standards

- None in statute.

1938 Historical Imagery

Layer Status

- The county would like to obtain other historical imagery and create a seamless layer by year of imagery. Ideally we would like to begin with the first known imagery from 1938 and then work on other available years. Historical imagery will be useful to see land use pattern change over time. These layers can also be helpful for land surveying purposes and for PLSS remonumentation.

Custodian

- Land Records Department

Maintenance

- No maintenance required as this is a static (snapshot in time) dataset.

Standards

- None in statute.

Address Points and Street Centerlines

Address Point Data

Layer Status

- This layer covers 100% of the address points in Bayfield County. This layer is vital for emergency response and damage assessment purposes.
- This layer is available on our county GIS website.
- This layer is used in the 911 dispatch software.
- Between 2017-2021, we have realigned all of our road centerlines to fit the county orthoimagery better and compared them with the "Gas Tax Maps."

Custodian

- Land Records Department

Maintenance

- This layer is in a constant state of maintenance. As new addresses are assigned this layer is updated. We place the address point on the principal structure. We also maintain an access point, which is located where the driveway meets the public/private roadway. Additionally, we also maintain a driveway layer that represents the access way from the public/private road to the structure. All driveway lines are placed and are now being realigned with the 2020 orthophotos.
- Bayfield County Land Records has taken on the responsibility of rural addressing, which includes assigning numbers, conducting site visits, coordinating Diggers Hotline locates, and ordering and installing the posts and signs. Additionally, we maintain an online address form to streamline the application process.
- Bayfield County Land Records has taken on the responsibility of the US National Grid (USNG) sign program. This is much like addressing but for response in remote silent sport areas. Our responsibility has been checking sign/coordinate locations, mapping and getting data into the dispatch center.
- To prepare for NG-911, we will need recurring data checks to ensure that our address data is compatible and meeting the standards; this may require special address-checking software to complete this task.

Standards

- None in statute
- Bayfield County Addressing Ordinance
- US Postal Standard
- ANI/ALI data format
- Wisconsin GIS NG9-1-1 Data Standard (Site/Structure Address Point)

Building Footprints

Layer Status

- Bayfield County has contracted with Pictometry to provide us with the building footprints of 2009 and 2015 imagery and was delivered in 2017. This layer is useful for change detection of structures for zoning violations and emergency response or damage assessment. People seem to love the building footprints because they are able to visually see the building in the aerial photo much better. This also has been a big help for addresses in question and the relative position.

Custodian

- Land Records Department

Maintenance

- Will be completed with each orthophoto flight.

Standards

- None in statute.

Street Centerlines

Layer Status

- This layer covers 100% of the roads in Bayfield County, including federal, state, county, town, village, tribal, and private roads. We would like to add a pronunciation aspect to our data in the future to help people pronounce some of our road names.
- This layer is available on our county GIS website.
- This layer is used in the 911 dispatch software.

Custodian

- Land Records Department

Maintenance

- This layer is updated when new public or private roads are constructed. This layer was originally digitized from 1990's aerial photography, so it needs updating. As time permits we are adjusting this layer to match our 2015 aerial photography and 2015-2016 LiDAR data. We have compared and adjusted this layer to the match the WisDOT town plat record road length for each municipality. The WisDOT town plat record shows all roads that are receiving transportation aid payments. We have had some issues with the roads in the federal forest so we have been driving the roads with GPS to verify the routes, many times the roads are bermed and we would like to map these in the future also.
- We work with local municipalities, Emergency Management, USPS (United States Postal Service), and local phone carriers to resolve any conflicting road names.

Standards

- None in statute
- Bayfield County Addressing Ordinance
- US Postal Standard – for naming new roads
- Wisconsin GIS NG9-1-1 Data Standard (Site/Structure Address Point)

Rights of Way

Layer Status

- This layer partially exists in Bayfield County and is maintained as part of our parcel mapping.

Custodian

- Land Records Department

Maintenance

- This will be developed as part of the parcel mapping process, however many of the roads in Bayfield County lack written descriptions or surveys so the potential accuracy needs improvement. These will be researched and/or updated as time permits, and as new information is obtained from various sources.

Standards

- None in statute.

Trails – ATV/UTV & Snowmobile

Layer Status

- This layer covers 100% of the state funded ATV/UTV and snowmobile trails within the county. Bayfield County has done some testing to show some video of the trails and would like to expand on this. Along with this we would like to be able to show live grooming of the trails.
- This layer is available on our county GIS website to view.
- This layer is used in the 911 dispatch software.

Custodian

- Land Records Department
- Forestry & Parks Department

Maintenance

- This layer is updated when the location of a trail is moved or if additional trails are added. This layer needs some adjusting in a few areas to match the actual physical location of the trail.

Standards

- None in statute.

Trails – Cross Country Skiing

Layer Status

- This layer covers 100% of the cross-country skiing trails located on county land only. There are other cross country skiing trails located within the county (villages, state land, etc.) which are not included in this layer. Bayfield County tries to acquire information as we find out about trails in the area.
- This layer is not available on our county GIS website.
- This layer is not used in the 911 dispatch software.

Custodian

- Land Records Department
- Forestry & Parks Department

Maintenance

- This layer is updated when the location of a trail is moved or if additional trails are added.

Standards

- N/A

Trails – Hiking/Biking

Layer Status

- This layer covers 100% of the hiking/biking trails located on county land only. There are other hiking/biking trails located within the county (villages, state land, etc.) which are not included in this layer. There are private groups that maintain the trails and maps, we work with them to get the additional layer information.
- This layer is not available on our county GIS website.
- This layer is not used in the 911 dispatch software.

Custodian

- Land Records Department
- Forestry & Parks Department

Maintenance

- This layer is updated when the location of a trail is moved or if additional trails are added.

Standards

- N/A

US National Grid Emergency Location Marker Signs

Layer Status

- This layer covers 10% of the silent sport trails located in Bayfield County.
- This layer is not available on our county GIS website.
- This layer is used in the 911 dispatch software.

Custodian

- Land Records Department
- Forestry & Parks Department

Maintenance

- This layer is maintained as signs are placed.

Standards

- N/A

Boat Landings

Layer Status

- This layer covers many of the boat landings within the county; however, it may not cover 100% of them since many different jurisdictions own/maintain boat landings.
- This layer is available on the county GIS website.
- This layer is used in the 911 dispatch software.

Custodian

- Land Records Department

Maintenance

- This layer is updated when the location of a boat landing is removed or if additional boat landings are added.

Standards

- N/A

Land Use

Current Land Use

Layer Status

- The identification and mapping of existing land uses was completed by each local municipality through their comprehensive land use plan. Each municipality hired a mapping firm to prepare the data. In Bayfield County, the existing land use map was prepared by SEH Professional Services. The data was then combined in the Bayfield County Comprehensive Plan. The maps were developed in common framework elements that would be easily imported into the Bayfield County land information system.

Custodian

- Land Records Department
- Planning and Zoning Department

Maintenance

- This layer is not maintained.

Standards

- N/A

Future Land Use

Layer Status

- The identification and mapping of future land uses was completed by each local municipality through their comprehensive land use plan. Each municipality hired a mapping firm to prepare the data. In Bayfield County, the future land use map was prepared by SEH Professional Services. The data was then combined in the Bayfield County Comprehensive Plan. The maps were developed in common framework elements that would be easily imported into the Bayfield County land information system.

Custodian

- Land Records Department
- Planning and Zoning Department

Maintenance

- As future land use changes occur the Bayfield County Land Records Department updates the changes in GIS and on static PDF maps.

Standards

66.1001, Wis. Stats. Comprehensive planning. Future land use maps are typically created through a community's comprehensive planning process. Future land use mapping for a county may be a patchwork of maps from comprehensive plans adopted by municipalities and the county merged into one map.

Zoning

County General Zoning

Layer Status

- The hard copy zoning district maps exist per township and are updated by Land Records of all towns except for the Town of Pilsen, which does not have county zoning. By order of the Zoning Administrator, approved re-zones from the county board are updated by the GIS Technician; these updates are done in GIS and also available as static PDF maps. The town maps were created from

the parcel polygons. A county-wide zone district map has been created and a digital copy resides as a layer on the GIS. The Planning and Zoning Department operates under the authority of the Bayfield County Zoning and Subdivision Control Ordinance. Bayfield County would like to update the zoning map to better fit topology in the parcel layer and align with adjustments in our parcel fabric. Additionally, some database updates need to take place to match GIS with our Land Records NOVUS tax database.

Custodian

- Land Records Department
- Planning and Zoning Department

Maintenance

- Bayfield County Land Records

Standards

- Bayfield County Zoning and Subdivision Control Ordinance
- s. 66.1001, Wis. Stats. Comprehensive planning

Municipal Zoning Information Floodplain

Layer Status

- The DNR regulates Floodplain Zoning in NR 116 as a statewide program on behalf of FEMA., the Federal Emergency Management Agency. The Zoning Administration is the repository for the hard copy FEMA Flood Insurance Rate Maps (FIRMS). The Zoning Administration regulates the program in the county in accordance with DNR regulations and is the repository for floodplain zoning Regional Flood Elevation (RFE) documents. Bayfield County has a digital copy of the new preliminary 2010 FEMA FIRMS and DNR Regional Flood Elevations maps from the custodial agency.

Custodian

- Planning and Zoning Department

Maintenance

- Unknown since this layer is created/maintained by FEMA.

Standards

- 87.30, Wis. Stats. Floodplain Zoning. Bayfield County Zoning and Subdivision Control Ordinance

Shoreland Zoning

Layer Status

- The county does have a GIS representation of shore land zoning boundaries. This layer covers the areas in the one (1) un-zoned town which is: Town of Pilsen. This layer is available on our county GIS website.

Custodian

- Land Records Department
- Planning and Zoning Department

Maintenance

- This layer is updated if a rezone request is approved within this area.

Standards

- 59.692, Wis. Stats. Zoning of shorelands on navigable waters

Farmland Preservation Zoning

Layer Status

- We have a list of 40 or so parcels, which are not updated in our Land Records system yet, there are some inconsistencies with some of the information provided on the forms.

Year of certification

- Each plan has a separate year of certification.

Custodian

- Land Conservation Department
- Land Records Department

Maintenance

- As needed

Standards

- 91, Wis. Stats. Farmland Preservation

Floodplain Zoning**Layer Status**

- Administered by county.
- The county does maintain a GIS representation of floodplain zoning boundaries.
- The county's floodplain zoning GIS data is the same as/identical to the FEMA map.
- Letter of Map Amendments are shown as a point with a link to the letter.

Custodian

- Planning and Zoning Department

Maintenance

- Updated as LOMA or other official documentation is received.

Standards

- FEMA and Bayfield County Floodplain Ordinance

County Special Purpose Zoning – Airport Protection**Layer Status**

- Not administered by county; however, Bayfield County has airport protection zones for the area around the Cable Airport in GIS format.
- Airport protection zoning map depicts
 - Aviation and Protection easements

Custodian

- NA

Maintenance

- This layer is static. The only time it would need updating is if the map is revised by the BOA (Bureau of Aeronautics).

Standards

- 114.136, Wis. Stats. Airport and spaceport approach protection.

Administrative Boundaries**Civil Division Boundaries****Layer Status**

- Bayfield County has the boundaries of county towns, villages, and cities mapped with each polygon having its associated GIS attributes.

Custodian

- Land Records Department

Maintenance

- As needed

Standards

- None in statute.

School Districts**Layer Status**

- Bayfield County contains six school districts. They are mapped, and each parcel in the real estate management system contains a field for its respective school district. The maps were provided to the School Superintendents who verified their locations. This layer is available in the 2008 Plat Book. School district boundaries are determined by and under the jurisdiction of the Wisconsin Department of Public Instruction. Notification from the Wisconsin DPI of changes to the school

districts is made to the Real Property Lister and then relayed to the Geographic Information Technician for changes to the map.

Custodian

- Land Records Department

Maintenance

- As needed

Standards

- None in statute.

Election Boundaries Municipal Wards, Voting Districts and Voting Places

Layer Status

- Bayfield County has county board supervisor districts and voting wards mapped. As directed by the County Clerk, custodian of the data, the GIS Technician maintains any revision or changes to the map.

Custodian

- Land Records Department (GIS database maintenance)
- County Clerk (custodian of all non-GIS related election items)

Maintenance

- As needed

Standards

- None in statute.

Utility Districts

Layer Status

- We have sanitary district that the county maintains. The county does not own/maintain any public water, sanitary or electric systems.
- There may be layers that show utility districts that are maintained by the villages.

Custodian

- Land Records Department

Maintenance

- We update it once a year and pull from the tax database.

Standards

- N/A

Emergency Service Boundary – Law / Fire / EMS

Layer Status

- **Law Enforcement:** There are four law enforcement agencies in the county, including the Bayfield County Sheriff's Office, Town of Iron River PD, City of Bayfield PD, and City of Washburn PD. This layer is complete, and our mapping shows the unique jurisdictions.
- **Fire:** There are fifteen fire departments in the county, including Port Wing, Herbster, Cornucopia, Red Cliff, Bayfield, Washburn, Ashland, Mason, Grand View, Drummond, Iron River, Brule, Barnes, Cable, and Namakagon. This layer is complete, and our mapping shows the unique jurisdictions.
- **EMS:** There are nine ambulance/EMS agencies in the county, including Ashland, Barnes, Bayfield, Great Divide, Iron River, Mason, Red Cliff, South Shore, and Washburn. This layer is complete, and our mapping shows the unique jurisdictions.
- The 911 Emergency Service Network map highlights emergency service boundaries, which were mapped digitally over the county basemap and in conjunction with the provisioning boundary/PSAP boundary/county outline.
- Emergency response booklet publications depend on public safety features and many other layers. The most recent emergency response booklet version printed is from 2012; we plan to print a 2022 version of the booklet.

Custodian

- The Sheriff's Office and Emergency Management Department are the custodians of the ESN data and Land Records Department is responsible for the updates to the GIS layer.

Maintenance

- The existing information and map are constantly corrected when verified, increasing accuracy. The ESN map is downloaded into the dispatch mapping software when it is revised.

Standards

- Wisconsin GIS NG-911 Data Standard

Public Safety Answering Points (PSAP) Boundary

Layer Status

- **PSAP Boundary:** The Bayfield County PSAP boundary is the same as the county boundary.
- The 911 Emergency Service Network map highlights emergency service boundaries, which were mapped digitally over the county basemap and in conjunction with the provisioning boundary/PSAP boundary/county outline.

Custodian

- The Sheriff's Office and Emergency Management Department are the custodians of the ESN data and Land Records Department is responsible for the updates to the GIS layer.

Maintenance

- The existing information and map are constantly corrected when verified, increasing accuracy. The ESN map is downloaded into the dispatch mapping software when it is revised.

Standards

- Wisconsin GIS NG-911 Data Standard

Provisioning Boundary

Layer Status

- **Provisioning Boundary:** The Bayfield County provisioning boundary is the same as the county boundary.

Custodian

- The Sheriff's Office and Emergency Management Department are the custodians of the ESN data and Land Records Department is responsible for the updates to the GIS layer.

Maintenance

- The existing information and map are constantly corrected when verified, increasing accuracy. The ESN map is downloaded into the dispatch mapping software when it is revised.

Standards

- Wisconsin GIS NG-911 Data Standard

Lake Districts

Layer Status

- There are two lake districts in Bayfield County at this time and they are not mapped.

Custodian

- Land Records Department

Maintenance

- N/A

Standards

- N/A

Native American Lands

Layer Status

- Bayfield County contains the Red Cliff Band of Lake Superior Chippewa Indian reservation. The exterior boundary of the reservation was digitized from a 1993 reservation map prepared by the Bureau of Indian Affairs. Tribal, trust land, and USA held in trust lands are listed in the real estate management system by ownership and land class codes. Bayfield County maintains this

information through deed transfers. Any changes to the boundaries of the reservation would be made under the direction of the Bureau of Indian Affairs.

Custodian

- Land Records Department

Maintenance

- As needed

Standards

- N/A

Other Administrative Districts – County Forest Land

Layer Status

- This layer exists for the entire county.
- This layer is available on our county GIS website.

Custodian

- Bayfield County Land Records Department is the custodian for the GIS layer. Forestry & Parks Department is the custodian of the County Forest Land.

Maintenance

- This layer was initially created prior to parcel mapping, so in many areas the county forest land boundaries don't line up with the parcel lines. As time goes on we would like to adjust the county forest land boundaries to match the parcel lines.

Standards

- None in statute.

Other Administrative Districts – County Parks

Layer Status

- Municipal parks are point plotted on the Places/Landmark GIS layer. Bayfield County contains a wealth of cross-country ski trails, snowshoe trails, hiking trails, ATV trails, snowmobile trails, and biking trails. Recreational trails within state and national forests have trail maps developed by the authority of jurisdiction. Sport clubs, associations, and area chamber of commerce's publish their own trail maps. These trail maps are not in a translatable, retrievable, or geographical referenced digital format for use by the county. The location of these trails, especially where they intersect public roads and accesses would be valuable for the emergency response agencies of Bayfield County. This layer is available on our county GIS website.

Custodian

- Land Records Department
- Forestry & Parks Department

Maintenance

- This layer is a point file and maintained as needed.

Standards

- None in statute.

Other Layers

Hydrography Maintained by County or Value-Added

e.g., Hydrography maintained separately from DNR or value-added, such as adjusted to orthos; Elevation-Derived Hydrography

Layer Status

- Bayfield County has the Lake Superior watershed hydro layer 12K from the soils analysis and a recent hydrology layer that include streams and rivers 20ft or wider and lakes 3 acres or greater from our most recent LiDAR flight. This layer is available on our county GIS website.

Custodian

- Land Records Department

Maintenance

- Hydro lines have not been adjusted.

Standards

- USGS Elevation-Derived Hydrography Specifications

Cell Phone Towers

Layer Status

- We believe all known cell towers are mapped as a separate layer and also included in our address point layer.
- This layer is used in the 911 dispatch software.
- This layer is also valuable when planning UAS flights.

Custodian

- Land Records Department

Maintenance

- We have not maintained towers as they are constructed, but if they have an address we add them to our address point layer. If there was a requirement we would map them.

Standards

- None in statute.

Bridges and Culverts

Layer Status

- The County Highway Department, municipal road supervisors, and the Wisconsin Department of Transportation have bridge, culvert, and traffic road sign data. Those jurisdictions are responsible for custodianship and maintenance of these datasets. Bayfield County has collected culvert information on the county roads and most of the culverts in Fish Creek watershed as part of a grant in the Land Conservation Department.

Custodian

- Highway Department

Maintenance

- Highway Department updates a table of information. Bayfield County is in talks with the Highway Department to revisit all of the culverts, which has not been done since 2005.

Standards

- None in statute.

Other - Railroads

Layer Status

- No railroads exist within Bayfield County so there is no layer for this feature.

Custodian

- N/A

Maintenance

- N/A

Standards

- N/A

Other - Pipelines

Layer Status

- There are three large natural gas distribution lines running through Bayfield County along with some smaller natural gas service lines. A GIS layer showing this location is available on the National Pipeline Mapping System (NPMS) website, at <https://www.npms.phmsa.dot.gov/>. Bayfield County did not create this layer and does not maintain this layer. We assume this layer was created by the pipeline companies and is maintained by them.

Custodian

- N/A

Maintenance

- Highway Department will maintain data as needed
- National Pipeline Mapping System

Standards

- None in statute.

Other - Manure Storage Facilities**Layer Status**

- The Land Conservation Department has a list of approximately 40 manure pit facilities mapped.

Custodian

- Land Conservation Department

Maintenance

- They update them as needed.

Standards

- N/A

Other - Dams**Layer Status**

- There is no layer for this feature, but the county is responsible for two dams, Murray Dam in the Town of Delta and one in the Town of Barnes on South Shore Rd. between Middle Eau Claire and Lower Eau Claire lakes.

Custodian

- N/A

Maintenance

- N/A

Standards

- N/A

3 LAND INFORMATION SYSTEM

The WLIP seeks to enable land information systems that are both modernized and integrated. Integration entails the coordination of land records to ensure that land information can be shared, distributed, and used within and between government at all levels, the private sector, and citizens.

LAND INFORMATION SYSTEM

An orderly method of organizing and managing land information and land records

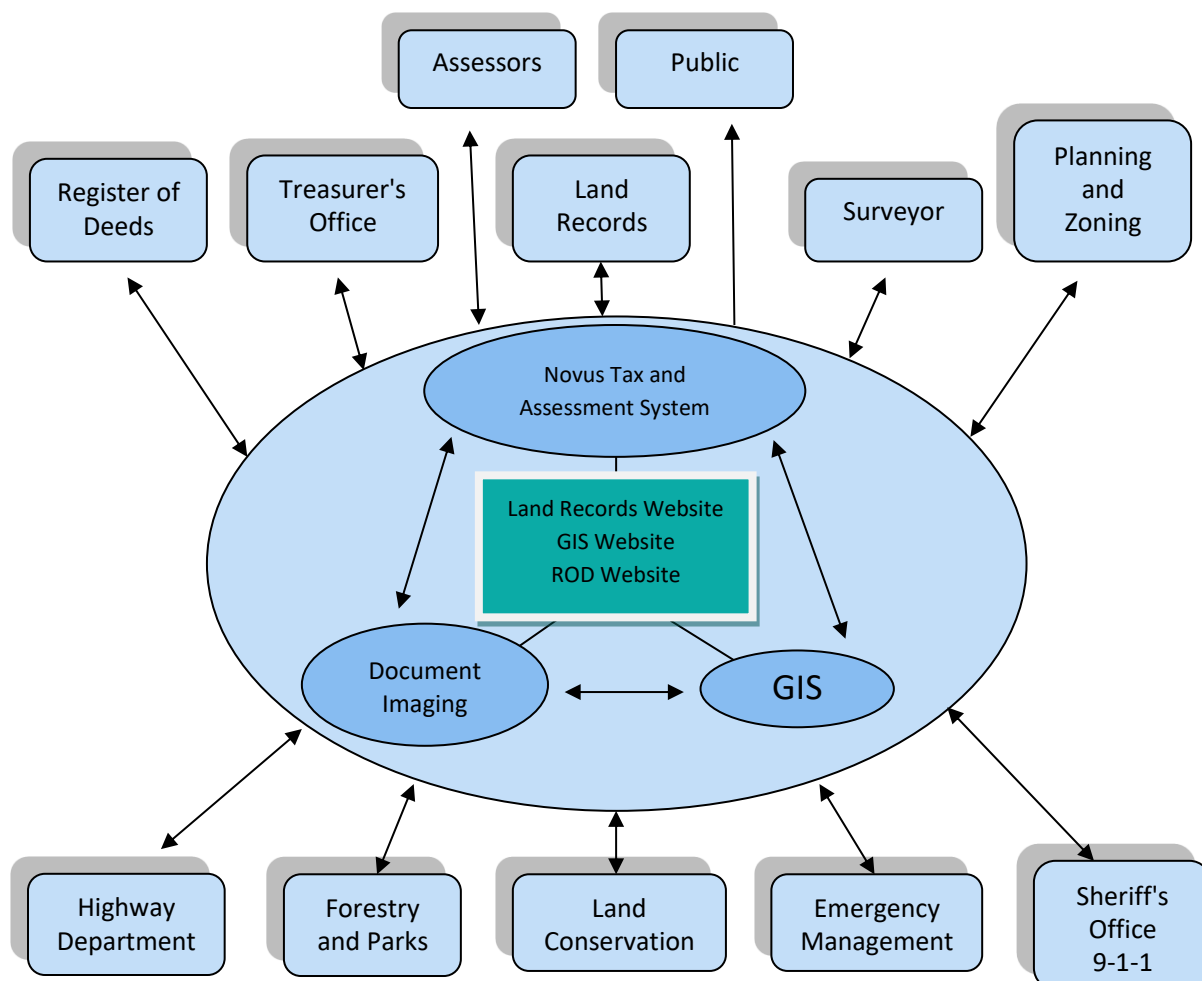
– Wis. Stats. section 16.967(1)(c)

One integration requirement is listed under s. 16.967(7)(a)(1), Wis. Stats., which states that counties may apply for grants for:

The design, development, and implementation of a land information system that *contains and integrates*, at a minimum, property, and ownership records with boundary information, including a parcel identifier referenced to the U.S. public land survey; tax and assessment information; soil surveys, if available; wetlands identified by the department of natural resources; a modern geodetic reference system; current zoning restrictions; and restrictive covenants.

This chapter describes the design of the county land information system, with focus on how data related to land features and data describing land rights are integrated and made publicly available.

Current Land Information System

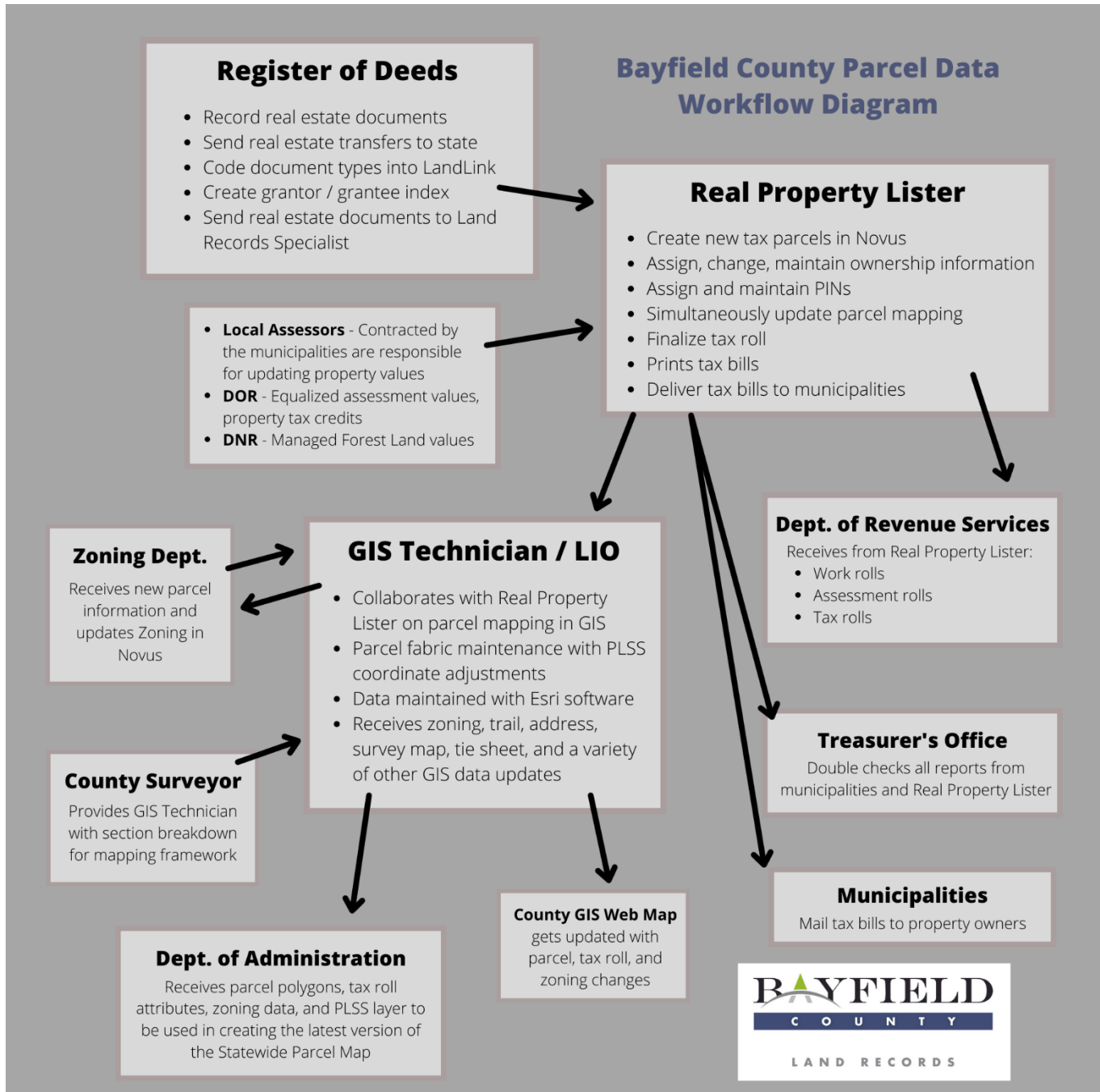


County Parcel Data Workflow Diagram

The following diagram depicts parcel data creation and workflow:

- Major components of parcel data, especially those referenced by s. 59.72(2)(a), including:
 - 1) parcel polygons, 2) tax roll data, and 3) zoning information
- Integration of parcel polygons with other data/attributes, if applicable

Departments/offices/staff involved with the creation and maintenance of parcels



Technology Architecture and Database Design

Hardware

The county's GIS/LIS environment is comprised of networks of computers and servers used for data creation and maintenance. The technology environment is based on the Microsoft Windows Server operating system and Microsoft SQL database servers. The servers are virtualized within VMware and reside on Dell hardware.

Software

There is a variety of software used for creating, storing, and maintaining data that exist and they are as follows:

- **IDOC** – Land records management software used by the Register of Deeds office for recording and indexing documents. In late 2022, IDOC will be replaced by LandLink.
- **Tapestry** – Internet based inquiry software to access Register of Deeds information 24/7/365. This is a pay per search application used by occasional users. In late 2022, this will switch to LandShark.
- **Laredo** – Internet based inquiry software to access Register of Deeds information 24/7/365. This is a subscription application used by daily users. In late 2022, this will switch to LandShark.
- **Carmody** – Imaging software used to store zoning/land use permits and other zoning/land use related documents.
- **NOVUS** – Software used for creating and maintaining parcel and tax data. Also has web browser functionality for inquiry into this data by external internet users.
- **ArcGIS Online** – This is used for our flood mapping and story maps.
- **Web AppBuilder** – We have been moving all of our applications over to HTML 5 from our FlexViewer. We also have a number of story maps build with ArcGIS Online.
- **FlexViewer** – Bayfield County contracts to build the application and maintains the site in-house to make changes for external internet users, this has been discontinued.
- **MS Access** – Historic zoning/land use permit information exists in this database, no newer information is entered into this database.
- **AutoCAD** – This is used by the Land Conservation staff to create, manage, and store all the county conservation data.
- **ESRI Suite** – This is used for all GIS data creation, management, and storage and includes ArcMap, ArcCatalog, ArcGIS Pro, and various add-ons.
- **Trimble GPS Pathfinder Office** – This software is used to apply corrections to the handheld GPS unit which is used for addressing purposes.

Website Development / Hosting

Esri's Web AppBuilder is used to create Bayfield County's web map applications. Access to this software is available through ArcGIS Online.

Municipal Data Integration Process

We do not have any data from municipalities that supply GIS data to us but in flood events or natural disasters we would like to include some tools for towns to supply us with data from the field. We have some online tools started using Survey123.

Metadata and Data Dictionary Practices

Metadata Creation

Metadata creation and maintenance process:

- Bayfield County continues to develop FGDC compliant metadata for all county datasets. The development will be determined by staffing and budgetary constraints. Bayfield County tries to update the layers that get the most use.

Metadata Software

Metadata software:

- The software does generate metadata consistent with the FGDC Content Standard for Digital Geospatial Metadata, and ISO geographic metadata standard 19115.
- We use ArcCatalog to complete the metadata.

Metadata fields manually populated:

- The software used to create and maintain metadata is ArcGIS 10.x which generates FGDC compliant metadata. At this time Bayfield County does not have a policy in place for minimum metadata requirements, though it makes it easier for the county to share data with less follow up questions about the data.

Public Access and Website Information

Type of Website	Software or App	3 rd Party or Contractor	URL	Update Frequency/Cycle
GIS web mapping site	ESRI	In-House	https://maps.bayfieldcounty.wi.gov/BayfieldWAB	Monthly
ROD land records search tools	Tapestry/ Laredo	Fidlar Technologies	https://fidlar.com/tapestry.aspx	Daily
RPL or tax parcel site	Novus	In-House	https://novus.bayfieldcounty.org:8081	As records are updated
Zoning information	ESRI	In-House	https://maps.bayfieldcounty.wi.gov/ZoningWAB	Quarterly
PLSS tie sheets	ESRI	In-House	https://maps.bayfieldcounty.wi.gov/BayfieldWAB	Quarterly
GIS Data Download			ftp.bayfieldcountygis.com	Monthly
Single Landing Page			www.bayfieldcounty.wi.gov/719/Land-Information	

As far as we know, no local municipal websites serving land information data exist within Bayfield County.

Data Sharing

Data Availability to Public

Bayfield County remains willing to share our data. We adhere to Wisconsin Open Record Laws, and we comply with state statutes for access to all land records. For GIS data, Bayfield County does NOT require a signed data disclaimer prior to delivery of the data. The county has adopted a fee schedule for our GIS datasets. These minimal fees only cover the costs of extracting, packaging, and delivering the data to the requestor. Contact the Land Records Department for specific information about acquiring GIS data. The tax assessment database is available from our GIS website; there is no fee for this download. The county continues to monitor the industry and public concerns related to privacy and distribution of data. At this time, searches can be performed by name, address, and parcel identification numbers.

Data Sharing Restrictions

Bayfield County adheres to Wisconsin Open Records Laws, and we comply with state statutes for access to all land records. Bayfield County has no restriction on data distribution/sharing.

Government-to-Government Data Sharing

At this time Bayfield County does not have any formal data sharing agreements. We have ongoing verbal data sharing arrangements with other county departments, municipalities, and consultants working for the county, state agencies, and federal agencies. Bayfield County encourages others to use our digital data.

Training and Education

Bayfield County will continue to fund staff training. This could include participation in workshops, conferences, and courses aimed at the development and implementation of the Land Information System. Land Information staff will also continue to work with our GIS consultants for technical assistance when needed.

Training such as hands-on, classroom, and virtual options are being held on various software programs as related to land records modernization. Technical assistance is received from software vendors, MN LIS/GIS, WLIA, WLIP, state agencies, and the State Cartographer's Office. All Bayfield County departments have access to the internet which allows for use of the technical assistance list server. Bayfield County is participating and will continue to monitor the development of the clearinghouse and standards adopted.

4 CURRENT & FUTURE PROJECTS

This chapter lists the current and future land information projects the county is currently undertaking or intends to pursue over its planning horizon. A project is defined as a temporary effort that is carefully planned to achieve a particular aim. Projects can be thought of as the means to achieving the county's mission for its land information system.

For each project, identify:

- Project Description/Goal
- Business Drivers
- Objectives/Measure of Success
- Project Timeframes
- Responsible Parties
- Estimated Budget Information

If your county foresees or has major technology projects planned, list them in this chapter as a project. Note that projects may focus on one single Foundational Element, or they may touch upon several Foundational Elements. Remember plans can be amended in the future should other significant projects arise.

Project

1) Countywide LiDAR

Project Description/Goal

Collection of countywide LiDAR in 2022 across 1,560 square miles, plus a buffer around the project boundary. The flight will take place in the spring 2022 during leaf-off conditions.

Impacts Foundational Elements: LiDAR and Other Elevation Data

Business Drivers

- County lacks updated LiDAR; the most recent LiDAR data is from 2015-2016 and is no longer accurate due to several climate events that have taken place, which have greatly altered the landscape. LiDAR data is utilized by all levels of government and private enterprise.
- Help with county forest planning and management.
- Help with planning and zoning processes that involve building and site assessment.
- Help with conservation efforts to analyze hydro features, dams, culverts, etc.

Objectives/Measure of Success

To make available to all levels of government, private enterprise, and public, updated countywide LiDAR.

Project Timeframes

Data acquisition will be completed in the spring of 2022 with data processing completed in summer 2022.

Responsible Parties

Land Information Office along with a private contractor will complete the project.

Estimated Budget Information

QL1 Option:

Base Project to meet QL1 specifications: not-to-exceed \$458,400
Bayfield County cost share: \$168,080
USGS cost share: \$290,320

Recommended Lidar enhancements and derivatives to the base project: \$49,250

- Improved hydro breaklines (20-ft and wider streams and 2 acre and larger ponds)
- 1-ft contours (topologically cleaned, all types)
- Automated classification of buildings and vegetation
- Bare earth dataset – class 2 ground points only
- Intensity imagery
- Digital surface model

Additional Lidar enhancements and derivatives for consideration:

- Ayres Lidar Online web application: \$9,500 (first year)
- Culvert collection and hydro-enforced DEM: \$52,600
- Further improved hydro breaklines (8-ft streams, 1-acre ponds): \$10,650
- 2D Building Outlines: \$16,750
- 2D Tree Canopy outlines: \$11,800
- 6% / 12% Slope Model: \$5,100
- *Closed depression mapping: \$15,200
- *EVAAL Soil Erosion Vulnerability Assessment: \$32,250

2) UAV/UAS/Drone

Project Description/Goal

As of December 2021, we have purchased three industrial UAS/drones. Long term goals are to build capacity in our drone program, to upgrade sensors, aircraft, training, and education. Flights are completed as needed based on requests from Sheriff, Forestry, UW-Extension, Health, Highway, Administration, Maintenance, Zoning, and other departments. The program has been placed in the Land Records Department because we have expertise in mapping, GIS, and remote sensing; this skillset is required for UAS image capture and maintenance.

Impacts Foundational Elements: Orthoimagery, LiDAR and Other Elevation Data, Land Use, Zoning, Other Layers

Business Drivers

- Economic Development (business aerals for promotion)
- Land Sales (helps people get a feel for the property)
- PLSS Land Use Comparisons (to find corners and document encroachments on county land)
- Topography Surveys (for county property surveys)
- Invasive Species Detection and Monitoring (examples: purple loosestrife, yellow iris, and Japanese knotweed)
- Search and Rescue with the Sheriff Department (document evidence and assist with locating missing persons)
- Non-Metallic Mining (gravel pit aerals for monitoring)
- Forest Monitoring (tree stands management and disease tracking)
- Quick deployment to promote and protect county resources
- Use for updating surveyed lands or creating elevation models
- Marketing of county resources such as parks and events

Objectives/Measure of Success

Being able to use real time or near real time imagery and data to make accurate time sensitive decisions.

Project Timeframes

As of December 2021, we have purchased three industrial UAS/drones. This is an ongoing project.

Responsible Parties

Land Records Administrator

Estimated Budget Information

Funding source is county levy, retained fees and WLIP grants. Approximately \$5,000.00 will be needed for upgrades to the program. Money spent will be on equipment upgrades, training, and education. This approximate cost is made up of salary, mileage, fringe, equipment (truck, GPS, total station, ATV), field supplies, office supplies, software, etc.

3) Back Indexing Project in Bayfield County Register of Deeds

Description/Goal

- Back Indexing Real Estate Records in the Bayfield County Register of Deed's Office
- Goal: To back index all real estate records; once indexed records are made available online

Impacts Foundational Elements: Parcel Mapping

Business Drivers

- Title Companies, Banks, Realtors, Attorneys, Zoning, Credit Unions, Dept of Revenue, DNR, Property Listers, Appraisers, Genealogist, Surveyors, Courts, Treasurer, Forestry, Hunters, and any person researching our real estate records

Objectives/Measure of Success

- To back index all real estate records back to the beginning of when we started keeping recording information
- Once indexed, the records will be available online for a fee, records will be accessible 24/7

Project Timeframes

Project start date: January 2019 -- Ongoing

Responsible Parties

The Register of Deeds will do the hiring and training. Supervision and work will be verified by Register of Deeds or other Register of Deeds' staff. And the reporting to progress to the LIO for reporting to the DOA.

Estimated Budget Information

Back Indexing employee in ROD
Ongoing until complete

4) NG-911

Project Description/Goal

- Ensure that the county GIS data integrates with the new 911 GIS data is prepared for Next Gen 911.

Impacts Foundational Elements: Address Points and Street Centerlines, Administrative Boundaries, Other Layers

Business Drivers

- State initiative urging counties to prepare for Next Gen 911 requirements
- Need to maintain current 911 system

Objectives/Measure of Success

- Compliance with data standards set forth and guided by statewide Next Gen 911 Plan
- To provide for a seamless update of GIS dataset so there is no duplication of effort, and one map is used for 911 system

Project Timeframes

- 2022-2025

Responsible Parties

- Sheriff, Emergency Government, Land Information, IT

Estimated Budget Information

- TBD - Staff time and consultant

Other Project Sections

Projects Related to Strategic Initiative Grants

Bayfield County is planning on using 2022-24 Strategic Grants to help offset the cost of PLSS.

Project Plan to Achieve Searchable Format (Benchmarks 1 & 2)

Project Description/Goal

Status of searchable format

- Completed. Bayfield County plans to meet the searchable format for both Benchmark 1 and 2.

Project Plan for Parcel Completion (Benchmark 3)

Project Description/Goal

Current status of parcel data

- Completed; Bayfield County has a completed parcel dataset for the entire county. Bayfield County is currently in the process of completing the Town of Iron River, which will include all recovered PLSS monuments. We have also been moving parcel boundaries in the cities of Washburn and Bayfield to match the aerial photos after we completed some in the Town of Iron River with success. Other areas in the county have also been adjusted as time allows and certain discrepancies are found and prioritized. This parcel maintenance is now completed in the ArcGIS Parcel Fabric, as the parcel migration from ArcMap was completed in 2021.

Project Plan for PLSS (Benchmark 4)

Project Description/Goal

Complete countywide PLSS remonumentation and obtain survey grade coordinates on 100% of the PLSS corners. The goal is to follow the PLSS remonumentation and GPSing with incorporating the coordinates into the parcel mapping for increased accuracy.

Planned approach

- Bayfield County has elected to accomplish the remonumentation program with in-house and contracted staff. The completion of our remonumentation program is anticipated to occur in the 2041. Our approach to updating the parcel information will be completing one township at a time and then creating a grid of the PLSS to the "40" level and remapping that area. We will focus on private ownership and the county land boundaries in townships with a great amount of federal forest land.

Current status

- Current status may be found in the Foundational Element Section on page 8 of this document.

Goals

- To ensure that the PLSS never falls into another state of disrepair in the future, a maintenance program is planned to commence immediately after the completion of the remonumentation program. The Town of Iron River will be our first priority due to the age and character of the existing data. This data is known to be a combination of conventional survey methods with GPS technologies, and we may see some minor coordinate refinement in this area. Ultimately, the goal of this maintenance program will be to target one civil township annually in addition to the ongoing road construction corner re-locations.

Missing corner notes

- We have a large number of tie sheets that are missing throughout the county. Many times, there will be evidence of a corner on site but there will not be a record of it, so we have to calculate the

math to see if it fits with the original survey. Many times, landowners have placed iron in the ground but may not know where the true location of the corner is located.

County boundary collaboration

- Bayfield County continues to engage in data sharing with adjoining counties. While we do not coordinate individual projects, we do send our data to the adjacent county where work has been done. Likewise, corner data is routinely received from each of the four neighboring counties (Ashland, Sawyer, and Douglas).

Business Drivers

- The *Project Plan for PLSS* is a requirement for Strategic Initiative Grant eligibility.
- Cost of surveying is less for all land owners when the PLSS is remonumented.
- Parcel mapping is more accurate when using remonumented PLSS corners.
- Timber cutting lines should match deed lines when using remonumented PLSS corners.
- Assessed acres should be closer to actual acres when parcel mapping is based on PLSS corners.
- All other land related layers (Zoning Districts, Federal Land, State Land, County Land, PLSS sections, Emergency Service Zones, Fire Districts, School Districts, County Supervisor Districts, Municipal Wards and Civil Boundaries) should be more accurate when based on parcel mapping which is based on remonumented PLSS corners. Overall, there will be an increase in the accuracy of other foundational elements. Many of the foundational elements are built from PLSS data.

Objectives/Measure of Success

The ultimate goal is 100% of the PLSS corners remonumented with survey grade coordinates. The Bayfield County remonumentation program originally began by contracting with the private sector. In 2016, the county added a full-time in-house Survey Technician to take on remonumentation duties. This provided the county the ability to maintain a high level of quality control, while also creating a more uniform data stream. We aim to establish, visit, and recover 100-300 corners per year with in-house and contracted staff in order to meet the 100% completion goal. Beyond the completion, we will aim to maintain the PLSS program.

Project Timeframes

By meeting our goal of 100-300 corners per year and continuing at this pace, we have determined that the remonumentation program will be completed in early 2041. When complete, the county will have 100% remonumentation and have survey grade coordinates on all PLSS corners along with accurate parcels that will be 2-4 feet from the true location rather than the disclaimer of 75-200 feet we use now. Once complete remonumentation is achieved in 2041, this will also mark the launch of a maintenance program that is intended to ensure the stability of this network for generations to come.

Responsible Parties

Land Records Department
County Surveyor
Deputy County Surveyor

Estimated Budget Information

The annual cost of the Bayfield County remonumentation program is estimated at \$100,000. This assumes that the County Surveyor focuses 10% of time on this program and the Survey Technician focuses 100% on remonumentation. Additionally, \$20,000 will go to external contracting; the majority of expenditures are on fuel, equipment, truck, GPS, ATV, field supplies, software, etc.